

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-003555**Date Inspected:** 06-Aug-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 2330**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Li Yan Hua**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG Assembly**Summary of Items Observed:**

This report serves to document the events occurring on this date at the following location. Caltrans Quality Assurance (QA) Inspector Robert Vatcher arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. The QA Inspector observed the following: The weather today is 27C, a low of 23C and a high of 32C, clear with winds south east & increased from 1-3 kph.

**Orthotropic Box Girder (OBG) Fabrication**

QA arrived at OBG Bay 1 at 0000 hrs. for the purpose of witnessing Production Monitoring Tests (PMT) in accordance with WPS B T 2342 U1 (Urib) -3 combination GMAW/ SAW on closed rib deck plates. Gantry number 2 will be utilized for these tests conducted on this date. As well these PMT's will be directly associated with Deck Plates DP 252-001 & DP469-001. Tacking was performed prior to QA arrival as well as Magnetic particle Testing (MT) for the associated tack welds. QA did observe that all three sections equaling to a total of six closed rib joints on one base "Deck" plate had intimate contact between the closed rib plates and the associated base plate material.

QA observed ZPMC QC Li Yan Hua (CWI for this evolution) and AB/F QC Chang Bao Qian personnel were available for this operation. As well the following welders were available and assigned to the corresponding horizontal welding positions;

Welder ID for Gantry 1 Operator – Wang Yegen 206412

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Welder ID for Gantry Weld 1- Zhang Li Ping 201840

Welder ID for Gantry Weld 2- Zhao Cheng Shuan 059400

Welder ID for Gantry Weld 3- Yuan Jenge Huan 059355

Welder ID for Gantry Weld 4- Jiang Shaung Chen 201788

Welder ID for Gantry Weld 5- Wang Xiao Rong 059445

Welder ID for Gantry Weld 6- Song Yin Shu 059421

As welding began the measured parameters were as follows;

### GMAW

	AMPS	VOLTS	Travel Speed
1.	362	30.7	537 mm
2.	363	30.8	Per Minute
3.	364	30.1	Constant
4.	355	30.7	
5.	358	30.4	
6.	368	30.5	

Grinding of the tack welds commenced at this time. Upon grinding QA performed a visual examination of all the root passes including the ground locations of tack welds. QA also observed ZPMC QC Li Yan Hua and AB/F QC Chang Bao Qian personnel perform the same. QC reported no relevant indications. QA concurred upon visual examination as well.

### SAW

	AMPS	VOLTS	Travel Speed
1.	683	25.5	516 mm

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2.	686	24.8	Per Minute
3.	682	25.8	Constant
4.	706	25.0	
5.	693	25.5	
6.	701	24.9	

Visual- QA observed ZPMC QC Li Yan Hua and AB/F QC Chang Bao Qian perform a 100% visual examination (VT) on DP 170-001 & DP360-001 represented specimens. As well QA performed a visual exam of all six joints. QA concurred with QC assessment that all six joints appeared to conform with the contract documents. QA observed that it appeared that no cracks, overlap, under sizing or over sizing, undercut or incomplete fusion were apparent.

Ultrasonic Testing (UT) - commenced & observed by QA. ZPMC UT personnel Ma Ji Long performed UT for depth of penetration who accepted all six joints by UT method. QA observed the calibration performed by ZPMC UT personnel as well as the UT of all six joints. QA observed that no signals representing lack of penetration appeared during these observations.

QA observes QC representative ZPMC QC Li Yan Hua and ABF Chang Bao Qian conduct measuring of the macro etched specimens

Deck Plates	Depth of Penetration	Tack Weld Location	Penetration < 80%
588/ 608 1-1	10.4 mm		
588/ 608 1-2	10.8 mm		
588/ 608 1-3	10.8 mm		
588/ 608 2-4	9.9 mm		
588/ 608 2-5	10.8 mm		
588/ 608 3-1	>=12.0 mm		
588/ 608 3-2	8.70 mm	71.9 %	
588/ 608 3-3	11.5 mm		
588/ 608 4-4	>=12.0 mm		
588/ 608 4-5	9.90 mm		
588/ 608 5-1	10.2 mm		
588/ 608 5-2	11.2 mm		
588/ 608 5-3	11.0 mm		
588/ 608 6-4	11.1 mm		
588/ 608 6-5	9.90 mm		

All were accepted by ZPMC QC Li Yan Hua and ABF QC Chang Bao Qian. QA conducted a measurement of all

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the specimens utilizing a loupe with a straight edge line and (10) 1.0 mm increments, concurring with the QC assessment and concluded that all the specimens had a depth of penetration greater than 80% & greater than 70% for a length of 5% or less of total weld length.

The above mentioned items as observed & documented by QA pertaining to the Production Material Testing (PMT) and associated macro etch specimen measuring appear to conform to the contract documents.

### Summary of Conversations:

No relevant conversations this date.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Ady Velasco 138-1694-2685, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Vatcher,Robert	Quality Assurance Inspector
<b>Reviewed By:</b>	Cuellar,Robert	QA Reviewer

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